SOUTHWEST RESEARCH INSTITUTE®

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CHEMISTRY AND CHEMICAL ENGINEERING DIVISION
DEPARTMENT OF ANALYTICAL AND ENVIRONMENTAL CHEMISTRY

July 3, 2017

CH2M Hill Plateau Remediation Company
2420 Stevens Center Place
Mail Stop H8-41
Richland, WA 99352

Attn: Ms. Karen Waters-Husted

Subject:	SAF No:	S17-004, I17-007, S17-005
	SDG Number:	614621
	SwRI Project Number:	20859.01.00X
	SwRI Task Order Number:	170426-3, 170502-5, 170503-9, 170504-4
	SwRI Sample Receipt Number:	59598, 59640, 59649, 59656
	Samples Received:	04.25.17, 05.02.17, 05.03.17, 05.04.17
	Fraction:	Radiological Analysis

Dear Ms. Waters-Husted:

Please find the enclosed results for the five (05) overall water samples received on the above referenced date. If you should have any questions, please do not hesitate to call me at (210) 522-3242, or at radonna.spies@swri.org.

Sincerely,

Radonna Spies
Principal Scientist

APPROVED:

FOR Michael J. Dammann
Director

RPS: jz
Encl

SOUTHWEST RESEARCH INSTITUTE
CLIENT: CH2M Hill Plateau Remediation Company
SwRI PROJECT#: 20859.01.00X
SwRI TASK ORDER: 170426-3, 170502-5, 170503-9, 170504-4
SwRI SRR: 59598, 59640, 59649, 59656
SDG: 614621
VTSR: 04.25.2017, 05.02.2017, 05.03.2017, 05.04.2017

CHAIN-OF-CUSTODY
&
SAMPLE RECEIPT PAPERWORK

Total Page Count: 010001 -
Fraction: Rad Pages: 010047

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # **S17-004-491**

Collector	Kevin Patterson CHPRC	**Contact/Requester**	Karen Waters-Husted	**Telephone No.**	509-376-4650
SAF No.	S17-004	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	300071
Project Title	SURV, APRIL 2017	**Logbook No.**	HNF-N-506 91/83	**Ice Chest No.**	6625-629
Shipped To (Lab)	Southwest Research Institute	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	7789 5144 9232
Protocol	CERCLA	**Priority:**	30 Days **PRIORITY**	**Offsite Property No.**	7813

POSSIBLE SAMPLE HAZARDS/REMARKS

** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐

N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B39687	N	W	APR 19 2017	1311	1x1-L G/P	PU241_IE_LSC: COMMON; PUISO_IE_PRECIP_AEA: COMMON	6 Months	HNO3 to pH <2

Client: CH2M Hill PRC
SwRI Project # 20859.01.00X
VTSR: 04/25/17 08:30
Battery Check: Y
Cooler/Container Wipe: <150 cpm; <0.5 mR/hr
Total cpm-mR/h (samples): <150 cpm; <0.5 mR/hr
(see Radioactive Material Receiving Form for more information)

SwRI SRR #59598
Case: CHPRC
Sample(s) Received: Intact
Background Check: <150 cpm (Lab 103)
Temp.: 17.3 °C (no ice) / SN # 021056
Wipe Frisk Description: Cooler(s) - 1

CHPRC
SRR # 59598

SDG # 614621

SwRI Prjct # 20859.01.00X
TO: 170426-3

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
Kevin Patterson CHPRC	APR 19 2017 1400	SSU-1	APR 19 2017 1400
SSU-1	APR 20 2017 0700	Janelle Zunker CHPRC	APR 20 2017 0700
Janelle Zunker CHPRC	APR 20 2017 1400	FEDEX	
FedEx	APR 25 2017 0830	Steven Dayles	APR 25 2017 0830 AM

Matrix *

S = Soil		DS = Drum Solids	
SE = Sediment		DL = Drum Liquids	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wipe	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process) — Disposed By — Date/Time

PRINTED ON 3/13/2017 — FSR ID = FSR42483 — A-6004-842 (REV 2)

07/03/2017 28816

010003 REV.0

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # I17-007-137

Page 1 of 1

Collector	Larry Rosane /CHPRC	**Contact/Requester**	WATERS-HUSTED, K	**Telephone No.**	376-4650
SAF No.	I17-007	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	300071
Project Title	Groundwater Background Study, April 20	**Logbook No.**	HNF-N-506 91 / 91	**Ice Chest No.**	GWS-294
Shipped To (Lab)	Southwest Research Institute	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	7790 3453 0247
Protocol	SURV	**Priority:**	30 Days **PRIORITY**	**Offsite Property No.**	7846

POSSIBLE SAMPLE HAZARDS/REMARKS

*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐

N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B39JR4	N	W	MAY 01 2017	0950	1x1-L P	9310_ALPHABETA_GPC: COMMON	6 Months	HNO3 to pH <2
B39JR4	N	W	↓	↓	4x1-L G/P	I129LL_SEP_LEPS_GS_LL: COMMON	6 Months	None
B39JR4	N	W			1x1-L P	PUISO_IE_PRECIP_AEA: COMMON	180 Days	HNO3 to pH <2
B39JR4	N	W			1x1-L G/P	SRISO_SEP_PRECIP_GPC: COMMON	6 Months	HNO3 to pH <2
B39JR4	N	W	MAY 01 2017	0950	1x1-L G/P	TC99_EIE_LSC: COMMON	6 Months	HNO3 to pH <2

Client: CH2M Hill PRC
SwRI Project # 20859.01.00X
VTSR: 05/02/17 09:00
Battery Check: Y
Cooler/Container Wipe: <150 cpm; <0.5 mR/hr
Total cpm-mR/h (samples): <150 cpm; <0.5 mR/hr
(see Radioactive Material Receiving Form for more information)

SwRI SRR #59640
Case: I17-007
Sample(s) Received: Intact
Background Check: <150 cpm (Lab 103)
Temp.: 16.8 °C (no ice) / SN # 021056
Wipe Frisk Description: Cooler(s) - 1

CHPRC
SRR # 59640
SDG # 614621

SwRI Prjct # 20859.01.00X
TO: 170502-5

	Print	Sign	Date/Time		Print	Sign	Date/Time
Relinquished By	Larry Rosane /CHPRC	Larry Rosane	MAY 01 2017 1025	Received By	Barbara Briggs /CHPRC	Be Briggs	MAY 01 2017 1025
Relinquished By	Barbara Briggs /CHPRC	Be Briggs	MAY 01 2017 1400	Received By	FEDEX		
Relinquished By	Fed Ex		MAY 02 2017 0900	Received By	Steven Douglas		MAY 02 2017 0900 AM
Relinquished By				Received By			

Matrix *

S	= Soil	DS	= Drum Solids
SE	= Sediment	DL	= Drum Liquids
SO	= Solid	T	= Tissue
SL	= Sludge	WI	= Wipe
W	= Water	L	= Liquid
O	= Oil	V	= Vegetation
A	= Air	X	= Other

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) | Disposed By | Date/Time

PRINTED ON 4/12/2017 **FSR ID = FSR43474** A-6004-842 (REV 2)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # **S17-005-411**

Collector	Daniel Klug CHPRC	**Contact/Requester**	Karen Waters-Husted	**Telephone No.**	509-376-4650
SAF No.	S17-005	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	300071
Project Title	SURV, MAY 2017	**Logbook No.**	HNF-N-506 92/68	**Ice Chest No.**	CWS-436
Shipped To (Lab)	Southwest Research Institute	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	7790 4528 6358 7857
Protocol	SURV	**Priority:**	30 Days **PRIORITY**	**Offsite Property No.**	

POSSIBLE SAMPLE HAZARDS/REMARKS

** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐

N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B39HL9	N	W	MAY 02 2017	0921	1x1-L G/P	SRISO_SEP_PRECIP_GPC: COMMON	6 Months	HNO3 to pH <2

CHPRC
SRR # 59649

SDG # 614621

SwRI Prjct # 20859.01.00X
TO: 170503-9

SwRI

Client: CH2M Hill PRC
SwRI Project # 20859.01.00X
VTSR: 05/03/17 08:30
Battery Check: Y
Cooler/Container Wipe: <150 cpm; <0.5 mR/hr
Total cpm-mR/h (samples): <150 cpm; <0.5 mR/hr
(see Radioactive Material Receiving Form for more information)

SwRI SRR #59649
Case: S17-005
Sample(s) Received: Intact
Background Check: <150 cpm (Lab 103)
Temp.: 16.9 °C (no ice) / SN # 021056
Wipe Frisk Description: Cooler(s) - 1

Relinquished By (Print)	Sign	Date/Time	Received By (Print)	Sign	Date/Time
Daniel Klug CHPRC	D K	MAY 02 2017 0930	Janelle Zunker CHPRC	J Zunker	MAY 02 2017 0930
Janelle Zunker CHPRC	J Zunker	MAY 02 2017 1400	FEDEX		
FedEx		MAY 03 2017 0830	Steven Douglas		MAY 03 2017 0830AM

Matrix *

S	= Soil		DS	= Drum Solids	
SE	= Sediment		DL	= Drum Liquids	
SO	= Solid		T	= Tissue	
SL	= Sludge		WI	= Wipe	
W	= Water		L	= Liquid	
O	= Oil		V	= Vegetation	
A	= Air		X	= Other	

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) | Disposed By | Date/Time

PRINTED ON 3/27/2017 **FSR ID = FSR39476** A-6004-842 (REV 2)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # **S17-005-412**

Collector	Daniel Klug CHPRC	**Contact/Requester**	Karen Waters-Husted	**Telephone No.**	509-376-4650
SAF No.	S17-005	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	300071
Project Title	SURV, MAY 2017	**Logbook No.**	HNF-N-506 92/68	**Ice Chest No.**	GWS 434
Shipped To (Lab)	Southwest Research Institute	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	7790 4588 6308 7857
Protocol	SURV	**Priority:**	30 Days **PRIORITY**	**Offsite Property No.**	

POSSIBLE SAMPLE HAZARDS/REMARKS

** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐

N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B39HM0	N	W	MAY 02 2017	0710	1x1-L G/P	SRISO_SEP_PRECIP_GPC: COMMON	6 Months	HNO3 to pH <2

CHPRC
SRR # 59649

SDG # 614621

SwRI Prjct # 20859.01.00X
TO: 170503-9

SwRI

Client: CH2M Hill PRC
SwRI Project # 20859.01.00X
VTSR: 05/03/17 08:30
Battery Check: Y
Cooler/Container Wipe: <150 cpm; <0.5 mR/hr
Total cpm-mR/h (samples): <150 cpm; <0.5 mR/hr
(see Radioactive Material Receiving Form for more information)

SwRI SRR #59649
Case: S17-005
Sample(s) Received: intact
Background Check: <150 cpm (Lab 103)
Temp.: 16.9 °C (no ice) / SN # 021056
Wipe Frisk Description: Cooler(s) - 1

	Print	Sign	Date/Time
Relinquished By	Daniel Klug CHPRC	D. Klug	MAY 02 2017 0930
Relinquished By	Janelle Zunker CHPRC		MAY 02 2017 1400
Relinquished By	FedEx		MAY 03 2017 0830
Relinquished By			

	Print	Sign	Date/Time
Received By	~~Barbara Briggs /CHPRC~~		
Received By	Janelle Zunker CHPRC		MAY 02 2017 0930
Received By	FEDEX		
Received By	Steven Douglas		MAY 03 2017 0830 AM
Received By			

Matrix *

S = Soil		DS = Drum Solids	
SE = Sediment		DL = Drum Liquids	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wipe	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time

PRINTED ON 3/27/2017 FSR ID = FSR43252 A-6004-842 (REV 2)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # **S17-005-338**

Collector	Juan Aguilar /CHPRC	**Contact/Requester**	Karen Waters-Husted	**Telephone No.**	509-376-4650
SAF No.	S17-005	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	300071
Project Title	SURV, MAY 2017	**Logbook No.**	HNF-N-506 88 / 45	**Ice Chest No.**	GWS- 468
Shipped To (Lab)	Southwest Research Institute	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	7790 5691 3776
Protocol	SURV	**Priority:**	30 Days **PRIORITY**	**Offsite Property No.**	7869

POSSIBLE SAMPLE HAZARDS/REMARKS

** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐

N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B39D68	N	W	5-3-17	1030	1x1-L G/P	SRISO_SEP_PRECIP_GPC: COMMON	6 Months	HNO3 to pH <2

CHPRC
SRR # 59656

SDG # 614621

SwRI Prjct # 20859.01.00X
TO: 170504-4

Client: CH2M Hill PRC
SwRI Project # 20859.01.00X
VTSR: 05/04/17 08:25
Battery Check: Y
Cooler/Container Wipe: <150 cpm; <0.5 mR/hr
Total cpm-mR/h (samples): <150 cpm; <0.5 mR/hr
(see Radioactive Material Receiving Form for more information)

SwRI SRR #59656
Case: S17-005
Sample(s) Received: Intact
Background Check: <150 cpm (Lab 103)
Temp.: 22.0 °C (no ice) / SN # 021056
Wipe Frisk Description: Cooler(s) - 1

	Print	Sign	Date/Time
Relinquished By	Juan Aguilar /CHPRC		MAY 0 3 2017 1115
Received By	Janelle Zunker CHPRC	Janelle	MAY 0 3 2017 1115
Relinquished By	Janelle Zunker CHPRC		MAY 0 3 2017 1400
Received By	FEDEX		Date/Time
Relinquished By	FedEx		MAY 04 2017 0825
Received By	Steven Douglas		MAY 04 2017 0825 AM
Relinquished By			Date/Time
Received By			Date/Time

Matrix *

S = Soil		DS = Drum Solids	
SE = Sediment		DL = Drum Liquids	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wipe	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PRINTED ON 3/27/2017 FSR ID = FSR40584 A-6004-842 (REV 2)

Southwest Research Institute

Laboratory Task Order

TO #: 170426-3 Revision: 3

Project(s): 20859.01.00X
Manager(s): SPIES, RADONNA
To Client: 05/23/17

SDG: 614621
VTSR: 04/25/17
CASE: S17-004

SRR #'s: 59598
Client(s): CH2M Hill Plateau Remediation Company

Instructions

CH2MHill Plateau Remediation Company.
SAF No. S17-004

SDG 614621 is open until _ 05/09/2017

30-day TAT.
FINAL DATA/HARDCOPY IS DUE TO THE CLIENT ON 05/24/2017.

2 overall samples (2 containers) were received on 04/25/2017.
OUT of the 2 samples, ONLY the 1 sample that requires Pu, is listed here.

Sample Analysis REQUIRED
PUISO_EIE_PRECIP_AEA
Plutonium-238, Plutonium-239/240
PU241_IE_LSC
Plutonium-241 _ 25 pCi/L

DATA DELIVERABLE _ Summary (Narrative / Results only)

ATTACHMENT C - QC Requirements for Chemical and Radiochemical Analysis
Section 7.2.2 Sample Data Packages
Section 7.2.3 Hard Copy Deliverable format
Section 7.2.4 Final Data Package Requirements
Section 8.8 CHPRC Electronic Address
Electronic copies of all sample receipt information, COCs, priority data packages, final data packages, corrected/revised data packages, closure reports, status reports, invoices, etc. shall be sent to: mailto:^CPP_Sample_Management@rl.gov
REVISION 1, DRmz 05/02/17: Task Order revised to indicate additional samples were received on 05/02/17, which have been grouped with SDG 614621, located in Task Order # 170502-5, SRR 59640.
REVISION 2, DRmz 05/03/17: Task Order revised to indicate additional samples were received on 05/03/17, which have been grouped with SDG 614621, located in Task Order # 170503-9, SRR 59649.
REVISION 3, DRmz 05/04/17: Task Order revised to indicate additional samples were received on 05/04/17, which have been grouped with SDG 614621, located in Task Order # 170504-4, SRR 59656.

Documents Related to this task order: 220286[COC for SRR 59598], 220287[Paperworkfor SRR 59598], 220332[Updated COC for SRR 59598]

Deliverables --> Hard Copy: no EDD: -YES- PDF: -YES-

Test: ALPHA-PU_SWRI
Section: RADCHEM
Holding: 180 days from CED
Alpha Spec Analysis for Isotopic Plutonium
Cnt: 1

System ID	Type	Cont	Matrix	Customer ID	CED	Method Date
614621		1	Water	B39687	19 Apr 17	16 Oct 17

Test: DIG-PRECIP-Pu
Section: RADPREP
Holding: 180 days from CED
Digestion for Pu with Precip
Cnt: 1

System ID	Type	Cont	Matrix	Customer ID	CED	Method Date
614621		1	Water	B39687	19 Apr 17	16 Oct 17

Test: DIG-Pu241
Section: RADPREP
Holding: 180 days from CED
Digestion for Plutonium-241
Cnt: 1

System ID	Type	Cont	Matrix	Customer ID	CED	Method Date
614621		1	Water	B39687	19 Apr 17	16 Oct 17

Southwest Research Institute

Laboratory Task Order

TO #: 170426-3 Revision: 3

Project(s): 20859.01.00X
Manager(s): SPIES, RADONNA
To Client: 05/23/17

SDG: 614621
VTSR: 04/25/17
CASE: S17-004

SRR #'s: 59598
Client(s): CH2M Hill Plateau Remediation Company

Test: LSC-PU241_SWRI Holding: 180 days from CED
Section: RADCHEM **Plutonium-241 by liquid scintillation counting** Cnt: 1

System ID	Type	Cont	Matrix	Customer ID	CED	Method Date
614621		1	Water	B39687	19 Apr 17	16 Oct 17

Test: SEP-Pu Holding: 180 days from CED
Section: RADPREP **Separation for Pu** Cnt: 1

System ID	Type	Cont	Matrix	Customer ID	CED	Method Date
614621		1	Water	B39687	19 Apr 17	16 Oct 17

Southwest Research Institute

Laboratory Task Order

TO #: 170502-5 Revision: 2

Project(s): 20859.01.00X
Manager(s): SPIES, RADONNA
To Client: 05/23/17

SDG: 614621
VTSR: 05/02/17
CASE: I17-007

SRR #'s: 59640
Client(s): CH2M Hill Plateau Remediation Company

Instructions

CH2MHill Plateau Remediation Company.
SAF No. I17-007

SDG 614621 is open until _ 05/09/2017

GROUPED _ with samples in SDG 614621, located in Task Order # 170426-3, SRR 59598.

30-day TAT.
FINAL DATA/HARDCOPY IS DUE TO THE CLIENT ON 05/24/2017.

1 overall sample (8 containers) was received on 05/02/2017, which is listed here.

Sample Analysis REQUIRED
9310_ALPHABETA_GPC
Gross alpha, Gross beta
I129LL_SEP_LEPS_GS
Iodine-129
PUISO_EIE_PRECIP_AEA
Plutonium-238, Plutonium-239/240
SRISO_SEP_PRECIP_GPC
Strontium-90
TC99_EIE_LSC
14133-76-7 Technetium-99

DATA DELIVERABLE _ Summary (Narrative / Results only)

ATTACHMENT C - QC Requirements for Chemical and Radiochemical Analysis
Section 7.2.2 Sample Data Packages
Section 7.2.3 Hard Copy Deliverable format
Section 7.2.4 Final Data Package Requirements
Section 8.8 CHPRC Electronic Address
Electronic copies of all sample receipt information, COCs, priority data packages, final data packages, corrected/revised data packages, closure reports, status reports, invoices, etc. shall be sent to: mailto:^CPP_Sample_Management@rl.gov
REVISION 1, DRmz 05/03/17: Task Order revised to indicate additional samples were received on 05/03/17, which have been grouped with SDG 614621, located in Task Order # 170503-9, SRR 59649.
REVISION 2, DRmz 05/04/17: Task Order revised to indicate additional samples were received on 05/04/17, which have been grouped with SDG 614621, located in Task Order # 170504-4, SRR 59656.

Documents Related to this task order: 220673[COC for SRR 59640], 220674[Paperwork for SRR 59640]

Deliverables --> Hard Copy: -YES- EDD: -YES- PDF: -YES-

Test: ALPHA-PU_SWRI Holding: 180 days from CED
Section: RADCHEM **Alpha Spec Analysis for isotopic Plutonium** Cnt: 1

System ID	Type	Cont	Matrix	Customer ID	CED	Method Date
614940		6-PUISO	Water	B39JR4	01 May 17	28 Oct 17

Test: DIG-GrossA/B Holding: 180 days from CED
Section: RADPREP **Digestion for Gross Alpha/Beta** Cnt: 1

System ID	Type	Cont	Matrix	Customer ID	CED	Method Date
614940		1-A/B	Water	B39JR4	01 May 17	28 Oct 17

Test: DIG-I129 Holding: 180 days from CED
Section: RADPREP **Digestion for Iodine-129** Cnt: 1

System ID	Type	Cont	Matrix	Customer ID	CED	Method Date
614940		2-I129LL	Water	B39JR4	01 May 17	28 Oct 17

Southwest Research Institute

Laboratory Task Order

TO #: 170502-5 Revision: 2

Project(s): 20859.01.00X
Manager(s): SPIES, RADONNA
To Client: 05/23/17

SDG: 614621
VTSR: 05/02/17
CASE: I17-007

SRR #'s: 59640
Client(s): CH2M Hill Plateau Remediation Company

System ID	Type	Cont	Matrix	Customer ID	CED	Method Date
614940		3-I129LL	Water	B39JR4	01 May 17	28 Oct 17
614940		4-I129LL	Water	B39JR4	01 May 17	28 Oct 17
614940		5-I129LL	Water	B39JR4	01 May 17	28 Oct 17

Test: DIG-PRECIP-Pu
Section: RADPREP
Holding: 180 days from CED
Digestion for Pu with Precip
Cnt: 1

System ID	Type	Cont	Matrix	Customer ID	CED	Method Date
614940		6-PUISO	Water	B39JR4	01 May 17	28 Oct 17

Test: DIG-Tc99
Section: RADPREP
Holding: 180 days from CED
Digestion for Tc99
Cnt: 1

System ID	Type	Cont	Matrix	Customer ID	CED	Method Date
614940		8-TC99	Water	B39JR4	01 May 17	28 Oct 17

Test: GPC-ALPHA_9310
Section: RADCHEM
Holding: 180 days from CED
Gross Alpha by gas flow proportional counting SW846 Method 9310
Cnt: 1

System ID	Type	Cont	Matrix	Customer ID	CED	Method Date
614940		1-A/B	Water	B39JR4	01 May 17	28 Oct 17

Test: GPC-BETA_9310
Section: RADCHEM
Holding: 180 days from CED
Gross Beta by gas flow proportional counting SW846 Method 9310
Cnt: 1

System ID	Type	Cont	Matrix	Customer ID	CED	Method Date
614940		1-A/B	Water	B39JR4	01 May 17	28 Oct 17

Test: GPC-Sr90_905.0
Section: RADCHEM
Holding: 180 days from CED
Strontium-90 by gas flow proportional counting EPA 905.0
Cnt: 1

System ID	Type	Cont	Matrix	Customer ID	CED	Method Date
614940		7-RISO	Water	B39JR4	01 May 17	28 Oct 17

Test: LSC-I129_SWRI
Section: RADCHEM
Holding: 180 days from CED
Iodine-129 by liquid scintillation counting
Cnt: 1

System ID	Type	Cont	Matrix	Customer ID	CED	Method Date
614940		2-I129LL	Water	B39JR4	01 May 17	28 Oct 17
614940		3-I129LL	Water	B39JR4	01 May 17	28 Oct 17
614940		4-I129LL	Water	B39JR4	01 May 17	28 Oct 17
614940		5-I129LL	Water	B39JR4	01 May 17	28 Oct 17

Test: LSC-TC99_SWRI
Section: RADCHEM
Holding: 180 days from CED
Technetium-99 by liquid scintillation counting
Cnt: 1

System ID	Type	Cont	Matrix	Customer ID	CED	Method Date
614940		8-TC99	Water	B39JR4	01 May 17	28 Oct 17

Test: MOUNT-GAB
Section: RADPREP
Holding: 180 days from CED
Mount for Gross Alpha/Beta
Cnt: 1

System ID	Type	Cont	Matrix	Customer ID	CED	Method Date
614940		1-A/B	Water	B39JR4	01 May 17	28 Oct 17

Southwest Research Institute

Laboratory Task Order

TO #: 170502-5 Revision: 2

Project(s): 20859.01.00X
Manager(s): SPIES, RADONNA
To Client: 05/23/17

SDG: 614621
VTSR: 05/02/17
CASE: I17-007

SRR #'s: 59640
Client(s): CH2M Hill Plateau Remediation Company

Test: SEP-Pu
Section: RADPREP
Holding: 180 days from CED
Separation for Pu
Cnt: 1

System ID	Type	Cont	Matrix	Customer ID	CED	Method Date
614940		6-PUISO	Water	B39JR4	01 May 17	28 Oct 17

Test: SEP-Sr90
Section: RADPREP
Holding: 180 days from CED
Separation for Sr90
Cnt: 1

System ID	Type	Cont	Matrix	Customer ID	CED	Method Date
614940		7-RISO	Water	B39JR4	01 May 17	28 Oct 17

Test: SEP-Tc99
Section: RADPREP
Holding: 180 days from CED
Separation for Tc99
Cnt: 1

System ID	Type	Cont	Matrix	Customer ID	CED	Method Date
614940		8-TC99	Water	B39JR4	01 May 17	28 Oct 17

Southwest Research Institute

Laboratory Task Order

TO #: 170503-9 Revision: 1

Project(s): 20859.01.00X
Manager(s): SPIES, RADONNA
To Client: 05/23/17

SDG: 614621
VTSR: 05/03/17
CASE: S17-005

SRR #'s: 59649
Client(s): CH2M Hill Plateau Remediation Company

Instructions

CH2MHill Plateau Remediation Company.
SAF No. S17-005

SDG 614621 is open until _ 05/09/2017

GROUPED _ with samples in SDG 614621, located in Task Order # 170426-3, SRR 59598; Task Order # 170502-5 SRR 59640.

30-day TAT.
FINAL DATA/HARDCOPY IS DUE TO THE CLIENT ON 05/24/2017.

4 overall samples (4 containers) were received on 05/03/2017.
OUT of the 4 samples, only the 2 samples that require SRISO, are listed here.

Sample Analysis REQUIRED
SRISO_SEP_PRECIP_GPC
Strontium-90

DATA DELIVERABLE _ Summary (Narrative / Results only)

ATTACHMENT C - QC Requirements for Chemical and Radiochemical Analysis
Section 7.2.2 Sample Data Packages
Section 7.2.3 Hard Copy Deliverable format
Section 7.2.4 Final Data Package Requirements
Section 8.8 CHPRC Electronic Address
Electronic copies of all sample receipt information, COCs, priority data packages, final data packages, corrected/revised data packages, closure reports, status reports, invoices, etc. shall be sent to: mailto:^CPP_Sample_Management@rl.gov
REVISION 1, DRmz 05/04/17: Task Order revised to indicate additional samples were received on 05/04/17, which have been grouped with SDG 614621, located in Task Order # 170504-4, SRR 59656.

Documents Related to this task order: 220758[COC for SRR 59649], 220759[Paperwork for SRR 59649]

Deliverables --> Hard Copy: no EDD: -YES- PDF: -YES-

Test: GPC-Sr90_905.0
Section: RADCHEM
Holding: 180 days from CED
Strontium-90 by gas flow proportional counting EPA 905.0
Cnt: 2

System ID	Type	Cont	Matrix	Customer ID	CED	Method Date
615013		1	Water	B39HL9	02 May 17	29 Oct 17
615014		1	Water	B39HM0	02 May 17	29 Oct 17

Test: SEP-Sr90
Section: RADPREP
Holding: 180 days from CED
Separation for Sr90
Cnt: 2

System ID	Type	Cont	Matrix	Customer ID	CED	Method Date
615013		1	Water	B39HL9	02 May 17	29 Oct 17
615014		1	Water	B39HM0	02 May 17	29 Oct 17

Southwest Research Institute

Laboratory Task Order

TO #: 170504-4 Revision: 0

Project(s): 20859.01.00X
Manager(s): SPIES, RADONNA
To Client: 05/23/17

SDG: 614621
VTSR: 05/04/17
CASE: S17-005

SRR #'s: 59656
Client(s): CH2M Hill Plateau Remediation Company

Instructions

CH2MHill Plateau Remediation Company.
SAF No. S17-005

SDG 614621 is open until _ 05/09/2017

GROUPED _ with samples in SDG 614621, located in Task Order # 170426-3, SRR 59598; Task Order # 170502-5 SRR 59640; Task Order # 170503-9, SRR 59649.

30-day TAT.
FINAL DATA/HARDCOPY IS DUE TO THE CLIENT ON 05/24/2017.

2 overall samples (2 containers) were received on 05/04/2017.
OUT of the 2 samples, only the sample that require SRISO, is listed here.

Sample Analysis REQUIRED
SRISO_SEP_PRECIP_GPC
Strontium-90

DATA DELIVERABLE _ Summary (Narrative / Results only)

ATTACHMENT C - QC Requirements for Chemical and Radiochemical Analysis
Section 7.2.2 Sample Data Packages
Section 7.2.3 Hard Copy Deliverable format
Section 7.2.4 Final Data Package Requirements
Section 8.8 CHPRC Electronic Address
Electronic copies of all sample receipt information, COCs, priority data packages, final data packages, corrected/revised data packages, closure reports, status reports, invoices, etc. shall be sent to: mailto:^CPP_Sample_Management@rl.gov

Documents Related to this task order: 220843[COC for SRR 59656], 220844[Paperwork for SRR 59656]

Deliverables --> Hard Copy: no EDD: -YES- PDF: -YES-

Test: GPC-Sr90_905.0 Holding: 180 days from CED
Section: RADCHEM **Strontium-90 by gas flow proportional counting EPA 905.0** Cnt: 1

System ID	Type	Cont	Matrix	Customer ID	CED	Method Date
615033		1	Water	B39D68	03 May 17	30 Oct 17

Test: SEP-Sr90 Holding: 180 days from CED
Section: RADPREP **Separation for Sr90** Cnt: 1

System ID	Type	Cont	Matrix	Customer ID	CED	Method Date
615033		1	Water	B39D68	03 May 17	30 Oct 17

Sample Receipt

Southwest Research Institute

Sample Receipt Number: 59598
Revision: 1

VTSR: 04/25/17

Time: 08:30:00

Project: 20859.01.00X
Case #: CHPRC
Client: CH2M Hill Plateau Remediation Company

This Receipt was Revised 06/23/2017

Manager: SPIES, RADONNA
Logged in by: SDOUGLAS
Creation Date: 04/25/17

Notes

Samples were received intact.

Fed Ex Tracking #(s):
778951449232 - 17.3 °C (no ice)

pH Test Paper 0.0-3.0
Lot #- 230315
Exp: 10/30/2018

Ice Chest No.:
GWS-629

Test requirements located on the applicable Task Order.

See chain-of-custody as part of the SRR system for more information.

Rev. 1
Corrected COC#

Backgaround CPM: <150 cpm
Container Wipe CPM: <150 cpm
Total CPM: <150

System ID	Customer ID	CED	Matrix	Containers	Special Reqs.
614621	B39687	04/19/17	Water	1	
614622	B39K80	04/20/17	Soil	1	

Containers: 2

Samples: 2

These documents are associated with this receipt: 220286[COC for SRR 59598], 220287[Paperworkfor SRR 59598], 220332[Updated COC for SRR 59598]

Thermometer: 021056
Temperature: 17.3

Page Printed: 06/26/2017 16:22
ver: (4/10/2017)

59598 CH2M Hill Plateau Remediatio

Sample Receipt

Southwest Research Institute

Sample Receipt Number: 59640
Revision: 1

VTSR: 05/02/17

Time: 09:00:00

Project: 20859.01.00X
Case #: I17-007
Client: CH2M Hill Plateau Remediation Company

This Receipt was Revised 05/02/2017

Manager: SPIES, RADONNA
Logged in by: SDOUGLAS
Creation Date: 05/02/17

Notes

Samples were received intact.

Fed Ex Tracking #(s):
779034530247 - 16.8 °C (no ice)

pH Test Paper 0.0-3.0
Lot #- 230315
Exp: 10/30/2018

Ice Chest No.:
GWS-294

Test requirements located on the applicable Task Order.

See chain-of-custody as part of the SRR system for more information.

Rev. 1
Corrected notes.

Background CPM: <150 cpm
Container Wipe CPM: <150 cpm
Total CPM: <150

System ID	Customer ID	CED	Matrix	Containers	Special Reqs.
614940	B39JR4	05/01/17	Water	8	

Containers: 8

Samples: 1

These documents are associated with this receipt: 220673[COC for SRR 59640], 220674[Paperwork for SRR 59640]

Thermometer: 021056
Temperature: 16.8

Page Printed: 06/23/2017 17:08
ver: (4/10/2017)

59640 CH2M Hill Plateau Remediatio

Sample Receipt

Southwest Research Institute

Sample Receipt Number: 59649

VTSR: 05/03/17

Time: 08:30:00

Project: 20859.01.00X
Case #: S17-005
Client: CH2M Hill Plateau Remediation Company

Manager: SPIES, RADONNA
Logged in by: SDOUGLAS
Creation Date: 05/03/17

Notes

Samples were received intact.

Fed Ex Tracking #(s):
779045286308 - 16.9 °C (no ice)

pH Test Paper 0.0-3.0
Lot #- 230315
Exp: 10/30/2018

Ice Chest No.:
GWS-436

Test requirements located on the applicable Task Order.

See chain-of-custody as part of the SRR system for more information.

Background CPM: <150 cpm
Container Wipe CPM: <150 cpm
Total CPM: <150

System ID	Customer ID	CED	Matrix	Containers	Special Reqs.
615011	B39DW0	05/02/17	Water	1	
615012	B39DW1	05/02/17	Water	1	
615013	B39HL9	05/02/17	Water	1	
615014	B39HM0	05/02/17	Water	1	

Containers: 4 **Samples: 4**

These documents are associated with this receipt: 220759[Paperwork for SRR 59649], 220758[COC for SRR 59649]

Thermometer: 021056
Temperature: 16.9

59649 CH2M Hill Plateau Remediatio

Page Printed: 06/23/2017 17:09
ver: (4/10/2017)

Sample Receipt

Southwest Research Institute

Sample Receipt Number: 59656

VTSR: 05/04/17

Time: 08:25:00

Project: 20859.01.00X
Case #: S17-005
Client: CH2M Hill Plateau Remediation Company

Manager: SPIES, RADONNA
Logged in by: SDOUGLAS
Creation Date: 05/04/17

Notes

Samples were received intact.

Fed Ex Tracking #(s):
779056913776 - 22.0 °C (no ice)

pH Test Paper 0.0-3.0
Lot #- 230315
Exp: 10/30/2018

Ice Chest No.:
GWS-468

Test requirements located on the applicable Task Order.

See chain-of-custody as part of the SRR system for more information.

System ID	Customer ID	CED	Matrix	Containers	Special Reqs.
615033	B39D68	05/03/17	Water	1	
615034	B39HP2	05/03/17	Water	1	

Containers: 2 **Samples:** 2

These documents are associated with this receipt: 220843[COC for SRR 59656], 220844[Paperwork for SRR 59656]

Thermometer: 021056
Temperature: 22.0

Page Printed: 06/23/2017 17:09
ver: (4/10/2017)

Southwest Research Institute

Traffic Report

Sample Custodian Signature: [signature]

1. Custody Seal — Present
2. Chain of Custody — Present
3. Sample Tags — Not Present
   Sample Tag Numbers — Not on COC
4. SMO Forms — Present

N/A

Client: CH2M Hill Plateau Remediation Company

Project: 20859.01.00X

Case: CHPRC / SDG: SEE TO.

Sample Receipt: 59598

Airbill: 778951449232

Custody Seal #(s): N/A

Date Received	Time Received	COC Record	SMO Sample #	Corresponding		Traffic Rpt, Tags, COC Agree	Sample Condition
				Sample Tag #	SwRI #		
04/25/17	08:30:00	S17-004-491	B39687	N/A	614621	YES	Intact
04/25/17	08:30:00	F16-037-121	B39K80	N/A	614622	YES	Intact

Southwest Research Institute
Traffic Report

Sample Custodian Signature: _____

1. Custody Seal — Present
2. Chain of Custody — Present
3. Sample Tags — Not Present
   Sample Tag Numbers — Not on COC N/A
4. SMO Forms — Present

Client: CH2M Hill Plateau Remediation Company
Project: 20859.01.00X
Case: I17-007 / SDG: SEE TO
Sample Receipt: 59640
Airbill: 779034530247

Custody Seal #(s): N/A

Date Received	Time Received	COC Record	SMO Sample #	Corresponding		Traffic Rpt, Tags, COC Agree	Sample Condition
				Sample Tag #	SwRI #		
05/02/17	09:00:00	I17-007-137	B39JR4	N/A	614940	YES	Intact

Southwest Research Institute

Traffic Report

Sample Custodian Signature: _____

1. Custody Seal — Present
2. Chain of Custody — Present
3. Sample Tags — Not Present N/A
   Sample Tag Numbers — Not on COC
4. SMO Forms — Present

Client: CH2M Hill Plateau Remediation Company

Project: 20859.01.00X

Case: S17-005 / SDG: See TO

Sample Receipt: 59649

Airbill: 779045286308

Custody Seal #(s): N/A

Date Received	Time Received	COC Record	SMO Sample #	Corresponding		Traffic Rpt, Tags, COC Agree	Sample Condition
				Sample Tag #	SwRI #		
05/03/17	08:30:00	S17-005-367	B39DW0	N/A	615011	YES	Intact
05/03/17	08:30:00	S17-005-368	B39DW1	N/A	615012	YES	Intact
05/03/17	08:30:00	S17-005-411	B39HL9	N/A	615013	YES	Intact
05/03/17	08:30:00	S17-005-412	B39HM0	N/A	615014	YES	Intact

Southwest Research Institute

Traffic Report

Sample Custodian Signature: _____

1. Custody Seal	Present	
2. Chain of Custody	Present	
3. Sample Tags	Not Present	N/A
Sample Tag Numbers	Not on COC	
4. SMO Forms	Present	

Client: CH2M Hill Plateau Remediation Company

Project: 20859.01.00X

Case: S17-005 / SDG: SEE T.O.

Sample Receipt: 59656

Airbill: 779056913776

Custody Seal #(s): N/A

Date Received	Time Received	COC Record	SMO Sample #	Corresponding		Traffic Rpt, Tags, COC Agree	Sample Condition
				Sample Tag #	SwRI #		
05/04/17	08:25:00	S17-005-338	B39D68	N/A	615033	YES	Intact
05/04/17	08:25:00	S17-005-428	B39HP2	N/A	615034	YES	Intact

SAMPLE LOG-IN SHEET

Lab Name: Southwest Research Institute		Page 1 of 1
Received By (Print Name): STEVEN DOUGLAS		Log-in Date: 04/25/2017
Received By (Signature): [signature]		
Case Number: CHPRC	Sample Delivery Group No.: N/A	SAS Number: N/A

Remarks: 20859.01.00X

			EPA Sample #	Corresponding Sample Tag #	Corresponding Assigned Lab #	Remarks: Condition of Sample Shipment, etc
1.	Custody Seal(s)	Present/Absent* Intact/Broken	B39687	N/A	614621	Intact
2.	Custody Seal Nos.	N/A	B39K80	N/A	614622	Intact
3.	Chain-of Custody Records	Present/Absent*				
4.	Traffic Reports or Packing Lists	Present/Absent*				
5.	Airbill	Airbill/Sticker Present/Absent*				
6.	Airbill No.	778951449232				
7.	Sample Tags	Present/Absent*				
	Sample Tag Numbers	Listed/Not listed on Chain of Custody (N/A)				
8.	Sample Condition	Intact/Broken*/ Leaking				
9.	Cooler Temperature	17.3C				
10.	Does Information on custody records, traffic reports, and sample tags agree?	Yes/No*				
11.	Date Received at Lab	04/25/2017				
12.	Time Received	08:30:00				

Sample Transfer		
Fraction: INORG	Fraction:	
Area #: R.13	Area #:	
By: STEVEN DOUGLAS	By:	
On: 04/25/2017	On:	

* Contact SMO and attach record of resolution

Reviewed By: [signature]	Logbook No.: Sample Receipt (59598)
Date: 4.25.17	Logbook Page No.: 9801 SEC 3 of 4

FORM DC-1 OLMO4.2

SAMPLE LOG-IN SHEET

Lab Name: Southwest Research Institute				Page 1 of 1
Received By (Print Name): STEVEN DOUGLAS				Log-in Date: 05/02/2017
Received By (Signature)				
Case Number: I17-007	Sample Delivery Group No. N/A			SAS Number N/A

Remarks: 20859.01.00X

			Corresponding		Remarks: Condition of Sample Shipment, etc
		EPA Sample #	Sample Tag #	Assigned Lab #	
1. Custody Seal(s)	Present/Absent* Intact/Broken	B39JR4	N/A	614940	Intact
2. Custody Seal Nos.	N/A				
3. Chain-of Custody Records	Present/Absent*				
4. Traffic Reports or Packing Lists	Present/Absent*				
5. Airbill	Airbill/Sticker Present/Absent*				
6. Airbill No.	779034530247				
7. Sample Tags	Present/Absent* N/A				
Sample Tag Numbers	Listed/Not listed on Chain of Custody				
8. Sample Condition	Intact/Broken*/ Leaking				
9. Cooler Temperature	16.8C				
10. Does Information on custody records, traffic reports, and sample tags agree?	Yes/No*				
11. Date Received at Lab	05/02/2017				
12. Time Received	09:00:00				

Sample Transfer

Fraction INORG	Fraction
Area # R.13	Area #
By STEVEN DOUGLAS	By
On 05/02/2017	On

* Contact SMO and attach record of resolution

Reviewed By	[signature]	Logbook No.	Sample Receipt (59640)
Date	5.2.17	Logbook Page No.	9808 SBO 1 of 4

FORM DC-1

OLMO4.2

SAMPLE LOG-IN SHEET

Lab Name: Southwest Research Institute	Page 1 of 1
Received By (Print Name): STEVEN DOUGLAS	Log-in Date: 05/03/2017
Received By (Signature):	
Case Number: S17-005	Sample Delivery Group No.: N/A
Remarks: 20859.01.00X	SAS Number: N/A

1. Custody Seal(s)	Present/Absent* Intact/Broken	
2. Custody Seal Nos.	N/A	
3. Chain-of Custody Records	Present/Absent*	
4. Traffic Reports or Packing Lists	Present/Absent*	
5. Airbill	Airbill/Sticker Present/Absent*	
6. Airbill No.	779045286308	
7. Sample Tags	Present/Absent* N/A	
Sample Tag Numbers	Listed/Not listed on Chain of Custody	
8. Sample Condition	Intact/Broken*/ Leaking	
9. Cooler Temperature	16.9C	
10. Does Information on custody records, traffic reports, and sample tags agree?	Yes/No*	
11. Date Received at Lab	05/03/2017	
12. Time Received	08:30:00	

Sample Transfer	
Fraction: NOPG	Fraction
Area #: R13	Area #
By: STEVEN DOUGLAS	By
On: 05/03/2017	On

EPA Sample #	Corresponding Sample Tag #	Corresponding Assigned Lab #	Remarks: Condition of Sample Shipment, etc
B39DW0	N/A	615011	Intact
B39DW1	N/A	615012	Intact
B39HL9	N/A	615013	Intact
B39HM0	N/A	615014	Intact

* Contact SMO and attach record of resolution

Reviewed By: 5.3.17	Logbook No.: Sample Receipt (59649)
Date	Logbook Page No.: 9809 SEC 1 OF 2

FORM DC-1 OLMO4.2

SAMPLE LOG-IN SHEET

Lab Name: Southwest Research Institute

Received By (Print Name): STEVEN DOUGLAS

Log-in Date: 05/04/2017

Received By (Signature):

Case Number: S17-005

Sample Delivery Group No.: N/A

SAS Number: N/A

Remarks: 20859.01.00X

			Corresponding		Remarks: Condition of Sample Shipment, etc
		EPA Sample #	Sample Tag #	Assigned Lab #	
1.	Custody Seal(s)	Present/Absent* Intact/Broken	B39D68	615033	Intact
2.	Custody Seal Nos.	N/A	B39HP2	615034	Intact
3.	Chain-of Custody Records	Present/Absent*			
4.	Traffic Reports or Packing Lists	Present/Absent*			
5.	Airbill	Airbill/Sticker Present/Absent*			
6.	Airbill No.	779056913776			
7.	Sample Tags	Present/Absent*			
	Sample Tag Numbers	Listed/Not listed on Chain of Custody N/A			
8.	Sample Condition	Intact/Broken*/ Leaking			
9.	Cooler Temperature	22.0C			
10.	Does Information on custody records, traffic reports, and sample tags agree?	Yes/No*			
11.	Date Received at Lab	05/04/2017			
12.	Time Received	08:25:00			

Sample Transfer

Fraction: INORG	Fraction
Area #: R.13	Area #
By: STEVEN DOUGLAS	By
On: 05/04/2017	On

* Contact SMO and attach record of resolution

Reviewed By: 5.4.17

Date: NA 5.4.17

Logbook No.: Sample Receipt (59656)

Logbook Page No.: ✓ 9810 SEC 1 of 1

FORM DC-1

OLMO4.2

SOUTHWEST RESEARCH INSTITUTE
CLIENT: CH2M Hill Plateau Remediation Company
SwRI PROJECT#: 20859.01.00X
SwRI TASK ORDER: 170426-3, 170502-5, 170503-9, 170504-4
SwRI SRR: 59598, 59640, 59649, 59656
SDG: 614621
VTSR: 04.25.2017, 05.02.2017, 05.03.2017, 05.04.2017

pH Report

SwRI

pH Preservation Report

Sample Receipt: 59598

Customer: CH2M Hill Plateau Remediation

Project: 20859.01.00X

Case: CHPRC

Received: 04/25/2017

Samples Logged in by: SDOUGLAS

				Login			Lab				
SwRI #	Customer ID	Container ID	Initial pH	Adjustment	Final pH	Paper Lot	Adjustment	Final pH	Paper lot	Adjusted	Lab Staff ID
614621 1	B39687		<2								
614622 1	B39K80										

SwRI

pH Preservation Report

Sample Receipt: 59640

Customer: CH2M Hill Plateau Remediation

Project: 20859.01.00X

Case: I17-007

Received: 05/02/2017

Samples Logged in by: SDOUGLAS

				Login			Lab				
SwRI #	Customer ID	Container ID	Initial pH	Adjustment	Final pH	Paper Lot	Adjustment	Final pH	Paper lot	Adjusted	Lab Staff ID
614940 1	B39JR4	A/B	<2								
614940 2	B39JR4	I129LL									
614940 3	B39JR4	I129LL									
614940 4	B39JR4	I129LL									
614940 5	B39JR4	I129LL									
614940 6	B39JR4	PUISO	<2								
614940 7	B39JR4	RISO	<2								
614940 8	B39JR4	TC99	<2								

SwRI

pH Preservation Report

Sample Receipt: 59649

Customer: CH2M Hill Plateau Remediation

Project: 20859.01.00X

Case: S17-005

Received: 05/03/2017

Samples Logged in by: SDOUGLAS

				Login			Lab				
SwRI #	Customer ID	Container ID	Initial pH	Adjustment	Final pH	Paper Lot	Adjustment	Final pH	Paper lot	Adjusted	Lab Staff ID
615011 1	B39DW0										
615012 1	B39DW1										
615013 1	B39HL9		<2								
615014 1	B39HM0		<2								

SwRI

pH Preservation Report

Sample Receipt: 59656

Customer: CH2M Hill Plateau Remediation

Project: 20859.01.00X

Case: S17-005

Received: 05/04/2017

Samples Logged in by: SDOUGLAS

				Login			Lab				
SwRI #	Customer ID	Container ID	Initial pH	Adjustment	Final pH	Paper Lot	Adjustment	Final pH	Paper lot	Adjusted	Lab Staff ID
615033 1	B39D68		<2								
615034 1	B39HP2										

SOUTHWEST RESEARCH INSTITUTE
CLIENT: CH2M Hill Plateau Remediation Company
SwRI PROJECT#: 20859.01.00X
SwRI TASK ORDER: 170426-3, 170502-5, 170503-9, 170504-4
SwRI SRR: 59598, 59640, 59649, 59656
SDG: 614621
VTSR: 04.25.2017, 05.02.2017, 05.03.2017, 05.04.2017

Sample Issue Resolution
SIR17-778

SAMPLE ISSUE RESOLUTION

SIR NUM	SIR17-778
REV NUM	0
DATE INITIATED	6/27/2017

SAMPLE EVENT INFORMATION

SAF NUM(S)	I17-007
OPERABLE UNIT(S)	NONE
PROJECT(S)	SURV17
SAMPLE EVENT TITLE(S)	SURV17
LABORATORY	Southwest Research Institute

SAMPLING INFORMATION

NUMBER OF SAMPLES	1
SAMPLE NUMBERS	B39JR4
SAMPLE MATRIX	WATER
COLLECTION DATE	5/1/2017 - 5/1/2017
SDG NUM	SWRI614621

ISSUE BACKGROUND

CLASS	Sample Management Issues
TYPE	Addition of Analyses
DESCRIPTION	Project would like to add PU-241 to samples.

DISPOSITION

DESCRIPTION	Add Pu-241 analyses to sample B39JR4.
JUSTIFICATION	Final Disposition: Laboratory will add analyses. SUBMITTED BY: Sarah Nagel DATE: 06/27/2017 ACCEPTED BY: Radonna Spies DATE: 06/27/2017

SOUTHWEST RESEARCH INSTITUTE
CLIENT: CH2M Hill Plateau Remediation Company
SwRI PROJECT#: 20859.01.00X
SwRI TASK ORDER: 170426-3, 170502-5, 170503-9, 170504-4
SwRI SRR: 59598, 59640, 59649, 59656
SDG: 614621
VTSR: 04.25.2017, 05.02.2017, 05.03.2017, 05.04.2017

RADCHEM ANALYSIS
Case Narrative

CLIENT: CH2M Hill Plateau Remediation Company
SDG: 614621
SwRI Project Number: 20859.01.00X
SwRI Sample Receipt Number: 59598, 59640, 59649, 59656
Page#: 1

SwRI CASE NARRATIVE

1. Five (05) samples were received for Radiological Analysis:

SwRI ID	Customer ID	Matrix
614621	B39687	Water
614940	B39JR4	Water
615013	B39HL9	Water
615014	B39HM0	Water
615033	B39D68	Water

Client: CH2M Hill Plateau Remediation
SDG: 614621
SwRI Project Number: 20859.01.00X
SwRI Task Order Number: 170426-3, 170502-5, 170503-9, 170504-4

RADIOLOGICAL ANALYSIS

The sample SDG 614621 consisted of five water samples received for radiological analysis. The water samples for radiological analysis were reported on an "as received" basis. The recommended sample holding time of six months was met. Only one of the five was analyzed for gross alpha / beta. Only four of the five were analyzed for total radioactive strontium. Only two of the five were analyzed for iso-plutonium. Only one of the five was requested for ^{241}Plutonium; however, SwRI sample ID 614940 was analyze for ^{241}Plutonium with batch QC being performed this sample. Per CHPRC request, the sample results for 614940 were reported for Pu241. Only one of the five was analyzed for ^{129}Iodine. Only one of the five was analyzed for ^{99}Technetium.

The samples were analyzed for the following:

Matrix	Analysis	Method
Water	Gross Alpha / Beta	Gas Proportional Counting
Water	Total Radioactive Strontium	Gas Proportional Counting
Water	^{238}Plutonium, $^{239/240}$Plutonium	Alpha Spectroscopy
Water	^{241}Plutonium	Liquid Scintillation Spectroscopy
Water	^{129}Iodine	Liquid Scintillation Spectroscopy
Water	^{99}Technetium	Liquid Scintillation Spectroscopy

A coverage factor of k=2 was applied to the TPU of all analytes. TPU was calculated using 1 sigma error.

The duplicate error ratios are calculated using 1 sigma TPU with a coverage factor of k=1.

The reported MDAs are sample-specific.

Gross Alpha and Gross Beta Preparation

A 200mL aliquot of each sample was digested in 250ml glass beakers with nitric acid for gross alpha and gross beta analysis. The samples were taken to dryness, nitrated, and transferred with 10ml of 2M nitric acid. A preparation blank, four laboratory control samples, and a duplicate were analyzed with each sample batch.

Total Radioactive Strontium Sample Preparation

A 250ml aliquot of each sample and a duplicate of one sample were used for total radioactive strontium. The samples were digested with nitric acid. A preparation blank, laboratory control sample, and a duplicate were digested with the samples. After digesting to dryness, the samples were dissolved and brought to a final volume of 10ml using an 8M nitric acid solution. Carriers and spikes were added prior to the digestion of the samples.

Client: CH2M Hill Plateau Remediation
SDG: 614621
SwRI Project Number: 20859.01.00X
SwRI Task Order Number: 170426-3, 170502-5, 170503-9, 170504-4

^{238}Plutonium, $^{239/240}$Plutonium, ^{241}Plutonium Preparation

A 100ml aliquot of the samples was used for plutonium analysis. The actinides were collected by precipitating the sample aliquot with diammonium hydrogen phosphate and calcium nitrate. The precipitates were brought to dryness and then nitrated once using nitric acid. The precipitates were then brought to a final volume of 10ml using a 3M nitric acid / 1M aluminum nitrate solution and filtered. A preparation blank, two laboratory control samples, and a duplicate were prepared with the sample batch. Tracers and spikes were added prior to the precipitation of the samples.

Total Radioactive Iodine Preparation

A 1000ml aliquot of each sample and a duplicate of one sample were used for total radioactive iodine. The samples were initially precipitated with silver nitrate, cleaned, and then precipitated as palladium iodide. A preparation blank, laboratory control sample, and a duplicate were precipitated with the samples. Carriers and spikes were added prior to the precipitation of the samples.

^{99}Technetium Preparation

A 200ml aliquot of the sample was digested in 250ml Pyrex beakers for ^{99}Technetium with nitric acid and hydrogen peroxide. A preparation blank, two laboratory control samples, duplicate, matrix spike, and a matrix spike duplicate were also digested with the sample batch. Spikes were added prior to the digestion of the samples. The technetium preparation blank, laboratory control samples, and samples were digested with 50ml of 1M nitric acid for 4 hours. Hydrogen peroxide was then added to each sample and allowed to digest for an additional hour. The digestates were then brought to a final volume of 50ml with deionized water.

Gas Flow Proportional Counting

Daily instrument checks were within control limits and the weekly four hour background was within date and control limits.

Gross Alpha and Gross Beta

The samples were digested using nitric acid and the digestate brought to a final volume of 15ml with 3M nitric acid. An aliquot of each digestate was placed in weighed stainless steel planchets. The planchets were dried, allowed to cool, and a final weight was recorded before analysis on a Gas Proportional Counter (GPC) for gross beta. The planchets were then torched, allowed to cool, and a final weight was recorded before analysis on a Gas Proportional Counter (GPC) for gross alpha. The samples were counted in the GPC for 90 minutes for the Gross Alpha/Beta analysis. GPC results were corrected to pCi using existing efficiency.

The preparation blank result was less than the MDA and the RL for both gross alpha and gross beta. The laboratory control samples were both within the control limits of 80-120% recovery for both gross alpha and gross beta. SwRI laboratory sample ID 614940 was analyzed in duplicate and the RPD was less than 20% for both gross alpha and gross beta.

Client: CH2M Hill Plateau Remediation
SDG: 614621
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Total Radioactive Strontium

A small portion of the digestion was taken for Sr carrier recovery determination, by ICP, prior to separation. The remaining portion of the digestate was separated using resins and then eluted from the resin, with another small portion taken for post-separation Sr carrier recovery determination by ICP. The elute was evaporated on tarred stainless steel planchets. After flaming and weighing the planchets, they were placed on the Gas Proportional Counter (GPC) for analysis.

For beta GPC analysis, daily instrument checks were within control limits. The weekly four hour background was within date and control limits.

For Sr carrier recovery, all ICP instrument QC criteria were met. The percent recoveries were within 90-110% for the initial and continuing calibration verifications. Strontium was not detected above the laboratory's reporting limit in the initial and continuing calibration blanks.

Results for stable Sr carrier were within the control limits of 40-110%. The result for the preparation blank was less than the MDA and the RL. The result for the laboratory control sample was within the control limits of 80-120% recovery. SwRI sample ID 614940 was analyzed in duplicate and the RPD was greater than 20%; however, the sample activity and duplicate activity was less than their respective MDAs.

Alpha Spectroscopy (Pu)

For all alpha analysis, daily pulser checks were within control limits. The weekly secondary or monthly primary calibration check standards were within date and control limits. The monthly alpha detector background was within date.

^{238}Plutonium, $^{239/240}$Plutonium

^{242}Plutonium was used as a tracer to follow chemical separation efficiency and losses. All tracer FWHM were within the control limits of 100keV. All reported results for the tracers were within the control limits of 30-105%. The results for the preparation blank for both ^{238}Pu and $^{239/240}$Pu were less than the MDA and the RL. The result for the laboratory control sample was within the control limits of 80-120% recovery. SwRI sample ID 614940 was analyzed as a duplicate and the RPD for ^{238}Pu was less than 20%, but the RPD for ^{239}Pu were greater than 20%. The activities of both the sample and duplicate were less than their respective MDAs for ^{239}Pu.

Liquid Scintillation Counting (^{241}Pu, ^{129}I, ^{99}Tc)

For all liquid scintillation analysis, the daily instrument performance checks were within the running statistical control limits.

The sample vials were inspected prior to counting to ensure homogeneity of the scintillation fluid with the sample.

Client: CH2M Hill Plateau Remediation
SDG: 614621
SwRI Project Number: 20859.01.00X
SwRI Task Order Number: 170426-3, 170502-5, 170503-9, 170504-4

^{241}Plutonium

The ^{241}Plutonium was analyzed by liquid scintillation counting using a region from 0keV to 20keV for ^{241}Plutonium. ^{242}Plutonium was used as a tracer to follow chemical separation efficiency and losses. Tracer recoveries were determined using alpha spectroscopy. All tracer FWHM were within control limits of 100keV. All reported results for the tracers were within the control limits of 30-105%. The result for the preparation blank for ^{241}Plutonium was less than the MDA and the RL. The result for the laboratory control sample was within the control limits of 80-120% recovery. SwRI sample ID 614940 was analyzed as a duplicate; however, the RPD was greater than 20%. The activity of the sample and duplicate were less than their respective MDAs. SwRI sample ID 614940 was prepared as a duplicate but did not require ^{241}Pu analysis. The results of SwRI sample ID 614940 were reported to qualify the data since the sample that required ^{241}Pu analysis was not prepared in duplicate. At the request of CHPRC, the results were reported for 614940. A SIR was generated and attached.

Note: Due to slight chemical differences between the ^{241}Pu calibration standards and the ^{241}Pu samples, the tSIEs (quench units) were greater than 10% in difference.

^{129}Iodine

For all liquid scintillation analysis, the daily instrument performance checks were within the running statistical control limits.

The precipitated AgI was then treated with zinc and sulfuric acid and reprecipitated as palladium iodide. The palladium iodide was cleaned with 6M ammonium hydroxide and precipitated again. It was then collected on a resolve filter that was rinsed and dried, and the weights were used to calculate percent recovery of the tracer.

Each filter was placed into a liquid scintillation vial and 0.5 mL of 6M ammonium hydroxide was added and the vial vortexed to dissolve the palladium iodide. Fifteen milliliters of cocktail was added to each vial and then counted on the liquid scintillation counter for 120 minutes using constant quench conditions.

All reported results for the tracers were within the control limits of 40-110%. The preparation blank result was less than the MDA and the RL. The result for the laboratory control sample was within the recovery control limits of 80-120%. SwRI laboratory sample ID 614940 was analyzed in duplicate and the RPD was greater than 20%; however, the sample and duplicate activities were both less than their MDAs.

Client: CH2M Hill Plateau Remediation
SDG: 614621
SwRI Project Number: 20859.01.00X
SwRI Task Order Number: 170426-3, 170502-5, 170503-9, 170504-4

^{99}Technetium

For all liquid scintillation analysis, the daily instrument performance checks were within the running statistical control limits.

For ^{99}Tc analysis, the ^{99}Tc was separated from the digestion using chemical separation resins. After chemical separation, the resin containing the ^{99}Tc was placed into a liquid scintillation vial and 15 ml of scintillation cocktail was added. The samples were counted on a liquid scintillation counter programmed to count only the ^{99}Tc region of interest. The liquid scintillation counter ^{99}Tc program was standardized using ^{99}Tc as the radioisotope to establish a specific efficiency quench curve.

The result for the preparation blank was less than the MDA and the RL. The results for both laboratory control samples were within the recovery control limits of 80-120%. The RPD of the laboratory control samples results was less than 20%. SwRI laboratory sample ID 614940 was analyzed in duplicate and the RPD was greater than 20%; however, the sample and duplicate activities were both less than their respective MDAs. SwRI sample ID 614940 was also analyzed as a matrix spike and matrix spike duplicate. Both the matrix spike and matrix spike duplicate were within the control limits of 75-125% recovery. The RPD of the matrix spike and matrix spike duplicate results was less than 20%.

"I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the laboratory manager or his/her designee, as verified by the following signature. This report shall not be reproduced except in full without the written approval of SwRI."

Research Scientist **Date** **07/03/17**

SOUTHWEST RESEARCH INSTITUTE
CLIENT: CH2M Hill Plateau Remediation Company
SwRI PROJECT#: 20859.01.00X
SwRI TASK ORDER: 170426-3, 170502-5, 170503-9, 170504-4
SwRI SRR: 59598, 59640, 59649, 59656
SDG: 614621
VTSR: 04.25.2017, 05.02.2017, 05.03.2017, 05.04.2017

RADCHEM ANALYSIS

SOUTHWEST RESEARCH INSTITUTE
CLIENT: CH2M Hill Plateau Remediation Company
SwRI PROJECT#: 20859.01.00X
SwRI TASK ORDER: 170426-3, 170502-5, 170503-9, 170504-4
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RADCHEM ANALYSIS
Sample Results

SOUTHWEST RESEARCH INSTITUTE

GAS FLOW PROPORTIONAL COUNTING DATA SHEET

Lab Name: Southwest Research Institute

Client: CH2M Hill Plateau Remediation

Lab Code: SwRI

Project No.: 20859.01.00X

Matrix: Water

SRR #: 59640

Date Received: 05/02/17

SDG: 614621

Task Order #: 170502-5

SAF #: I17-007

GROSS ALPHA - BETA

Sample ID	Lab System ID	Analyte	Results (pCi/L)	Q	TPU (2s) (pCi/L)	MDA (pCi/L)	Counting Error (2s)	Date Analyzed
Prep Blank	pb17f15ke2	Alpha	3.89E-01	U	4.76E-01	8.61E-01	4.74E-01	06/19/17
	pb17f15ke2	Beta	-8.65E-02	U	4.05E-01	9.66E-01	4.05E-01	06/17/17
Lab Control	lcs17f15ke4	Alpha	2.43E+02		3.00E+01	8.64E-01	9.11E+00	06/19/17
	lcs17f15ke2	Beta	3.44E+02		4.14E+01	9.66E-01	8.82E+00	06/17/17
True Value	-----	Alpha	2.63E+02		-----	-----	-----	-----
	-----	Beta	3.72E+02		-----	-----	-----	-----
Recovery	-----	Alpha	92.4%		-----	-----	-----	-----
	-----	Beta	92.5%		-----	-----	-----	-----
Lab Control D	lcs17f15ke5	Alpha	2.43E+02		3.00E+01	8.62E-01	9.09E+00	06/19/17
	lcs17f15ke3	Beta	3.35E+02		4.03E+01	9.66E-01	8.70E+00	06/17/17
True Value	-----	Alpha	2.63E+02		-----	-----	-----	-----
	-----	Beta	3.72E+02		-----	-----	-----	-----
Recovery	-----	Alpha	92.4%		-----	-----	-----	-----
	-----	Beta	89.9%		-----	-----	-----	-----
RPD	-----	Alpha	*0.01%*		-----	-----	-----	-----
	-----	Beta	*2.85%*		-----	-----	-----	-----
B39JR4	614940	Alpha	1.71E+00	U	1.53E+00	2.31E+00	1.52E+00	06/19/17
	614940	Beta	4.27E+00	U	1.77E+00	2.08E+00	1.70E+00	06/17/17
Duplicate result	614940D	Alpha	1.50E+00	U	1.47E+00	2.34E+00	1.46E+00	06/19/17
	614940D	Beta	4.42E+00	U	1.80E+00	2.08E+00	1.72E+00	06/18/17
RPD	-----	Alpha	12.7%		-----	-----	-----	-----
	-----	Beta	3.6%		-----	-----	-----	-----

Q - Data Qualifier. U - Less than MDA. MDA - Minimum Detectable Activity. TPU - Total Propagated Uncertainty. MDAs are sample specific.

SOUTHWEST RESEARCH INSTITUTE

GAS FLOW PROPORTIONAL COUNTING DATA SHEET

Lab Name: Southwest Research Institute

Client: CH2M Hill Plateau Remediation

Lab Code: SwRI

Project No.: 20859.01.00X

Matrix: Water

SRR #: 59640, 59649, 59656

Date Received: 05/02/17, 05/03/17, 05/04/17

SDG: 614621

Task Order #: 170502-5, 170503-9, 170504-4

SAF #: I17-007, S17-005

STRONTIUM-90

Sample ID	Lab System ID	Analyte	Results (pCi/L)	Q	TPU (2s) (pCi/L)	MDA (pCi/L)	Counting Error (2s)	Sr Tracer Rec.	Date Analyzed
Prep Blank	pbwe24wn1	^{90}Sr	-1.33E-01	U	4.77E-01	1.05E+00	4.77E-01	93.5%	06/06/17
Lab Control	lcswe24wn1	^{90}Sr	1.37E+02		1.77E+01	1.04E+00	7.93E+00	94.2%	06/06/17
True Value	-----	^{90}Sr	1.52E+02		-----	-----	-----	-----	-----
Recovery	-----	^{90}Sr	89.9%		-----	-----	-----	-----	-----
B39JR4	614940	^{90}Sr	-2.22E-01	U	3.68E-01	1.03E+00	3.67E-01	95.0%	06/06/17
Duplicate result	614940D	^{90}Sr	0.00E+00	U	5.11E-01	1.07E+00	5.11E-01	91.4%	06/06/17
RPD	-----	^{90}Sr	*200%*		-----	-----	-----	-----	-----
B39HL9	615013	^{90}Sr	2.00E-02	U	5.09E-01	1.02E+00	5.09E-01	95.8%	06/06/17
B39HM0	615014	^{90}Sr	1.29E-01	U	5.66E-01	1.05E+00	5.66E-01	92.8%	06/06/17
B39D68	615033	^{90}Sr	4.51E-01	U	6.74E-01	1.02E+00	6.72E-01	95.6%	06/06/17

Q - Data Qualifier. U - Less than MDA. MDA - Minimum Detectable Activity. TPU - Total Propagated Uncertainty. MDAs are sample specific.

SOUTHWEST RESEARCH INSTITUTE

LIQUID SCINTILLATION COUNTING DATA SHEET

Lab Name: Southwest Research Institute

Client: CH2M Hill Plateau Remediation

Lab Code: SwRI

Project No.: 20859.01.00X

Matrix: Water

SRR #: 59640

Date Received: 05/02/17

SDG: 614621

Task Order #: 170502-5

SAF #: I17-007

IODINE-129

Sample ID	Lab System ID	Analyte	Results (pCi/L)	Q	TPU (2s) (pCi/L)	MDA (pCi/L)	Counting Error (2s)	PdI_2 Tracer Rec.	Date Analyzed
Prep Blank	pbwf15jt1	^{129}I	-3.72E-01	U	2.72E-01	9.24E-01	2.72E-01	94.99%	06/17/17
Lab Control	lcswf15jt1	^{129}I	1.01E+03		4.54E+01	9.73E-01	2.47E+00	90.25%	06/17/17
True Value	-----	^{129}I	1.05E+03		-----	-----	-----	-----	-----
Recovery	-----	^{129}I	95.7%		-----	-----	-----	-----	-----
B39JR4	614940	^{129}I	1.97E-01	U	2.71E-01	9.02E-01	2.71E-01	97.33%	06/17/17
Duplicate result	614940D	^{129}I	-2.44E-01	U	2.67E-01	9.02E-01	2.67E-01	97.26%	06/17/17
RPD	-----	^{129}I	1877%		-----	-----	-----	-----	-----

Q - Data Qualifier. U - Less than MDA. MDA - Minimum Detectable Activity. TPU - Total Propagated Uncertainty. MDAs are sample specific.

SOUTHWEST RESEARCH INSTITUTE

LIQUID SCINTILLATION COUNTING DATA SHEET

Lab Name: Southwest Research Institute

Client: CH2M Hill Plateau Remediation

Lab Code: SwRI

Project No.: 20859.01.00X

Date Received: 04/25/17, 05/02/17

Matrix: Water

SRR #: 59598, 59640

SDG: 614621

Task Order #: 170426-3, 170502-5

SAF #: S17-004, I17-007

PLUTONIUM-241

Sample ID	Lab System ID	Analyte	Results (pCi/L)	Q	TPU (2s) (pCi/L)	MDA (pCi/L)	Counting Error (2s)	^{242}Pu Tracer Rec.	Date Analyzed
Prep Blank	pbwe31sm3	^{241}Pu	-7.28E+00	U	1.65E+01	1.34E+01	1.53E+01	82.2%	06/09/17
Lab Control	lcswe31sm5	^{241}Pu	7.75E+02		1.19E+02	1.32E+01	3.71E+01	83.4%	06/09/17
True Value	-----	^{241}Pu	9.38E+02		-----	-----	-----	-----	-----
Recovery	-----	^{241}Pu	82.6%		-----	-----	-----	-----	-----
B39687	614621	^{241}Pu	-9.17E+00	U	1.49E+01	1.24E+01	1.40E+01	88.7%	06/09/17
B39JR4	614940	^{241}Pu	-1.48E+01	U	1.51E+01	1.32E+01	1.47E+01	83.5%	06/09/17
Duplicate result	614940D	^{241}Pu	-8.98E+00	U	1.48E+01	1.23E+01	1.39E+01	89.3%	06/09/17
RPD	-----	^{241}Pu	48.7%		-----	-----	-----	-----	-----

Q - Data Qualifier. U - Less than MDA. MDA - Minimum Detectable Activity. TPU - Total Propagated Uncertainty. MDAs are sample specific.

SOUTHWEST RESEARCH INSTITUTE

LIQUID SCINTILLATION COUNTING DATA SHEET

Lab Name: Southwest Research Institute

Client: CH2M Hill Plateau Remediation

Lab Code: SwRI

Project No.: 20859.01.00X

Matrix: Water

SRR #: 59640

Date Received: 05/02/17

SDG: 614621

Task Order #: 170502-5

SAF #: I17-007

TECHNETIUM-99

Sample ID	Lab System ID	Analyte	Results (pCi/L)	Q	TPU (2s) (pCi/L)	MDA (pCi/L)	Counting Error (2s)	Date Analyzed
Prep Blank	pbwe31sm5	^{99}Tc	-1.29E+00	U	2.63E+00	4.49E+00	2.63E+00	06/19/17
Lab Control	lcswe31sm8	^{99}Tc	9.65E+01		1.15E+01	4.48E+00	4.61E+00	06/19/17
True Value	-----	^{99}Tc	9.99E+01		-----	-----	-----	-----
Recovery	-----	^{99}Tc	96.6%		-----	-----	-----	-----
Lab Control D	lcswe31sm9	^{99}Tc	9.46E+01		1.13E+01	4.48E+00	4.59E+00	06/19/17
True Value	-----	^{99}Tc	9.99E+01		-----	-----	-----	-----
Recovery	-----	^{99}Tc	94.7%		-----	-----	-----	-----
RPD	-----	^{99}Tc	1.98%		-----	-----	-----	-----
B39JR4	614940	^{99}Tc	-1.33E+00	U	2.63E+00	4.49E+00	2.63E+00	06/19/17
Duplicate result	614940D	^{99}Tc	-4.43E-02	U	2.66E+00	4.48E+00	2.66E+00	06/19/17
RPD	-----	^{99}Tc	187%		-----	-----	-----	-----
Spike Result	614940MS	^{99}Tc	9.38E+01		1.12E+01	4.47E+00	4.57E+00	06/20/17
Spike added	-----	^{99}Tc	9.99E+01		-----	-----	-----	-----
Recovery	-----	^{99}Tc	95.2%		-----	-----	-----	-----
Spike Duplicate Result	614940MSD	^{99}Tc	9.75E+01		1.16E+01	4.47E+00	4.62E+00	06/20/17
Spike added	-----	^{99}Tc	9.99E+01		-----	-----	-----	-----
Recovery	-----	^{99}Tc	97.6%		-----	-----	-----	-----
RPD	-----	^{99}Tc	3.8%		-----	-----	-----	-----

Q - Data Qualifier. U - Less than MDA. MDA - Minimum Detectable Activity. TPU - Total Propagated Uncertainty. MDAs are sample specific.

SOUTHWEST RESEARCH INSTITUTE

ALPHA SPECTROMETRY ANALYSIS DATA SHEET

Lab Name: Southwest Research Institute

Client: CH2M Hill Plateau Remediation

Lab Code: SwRI

Project No.: 20859.01.00X

Matrix: Water

SRR #: 59598, 59640

Date Received: 04/25/17, 05/02/17

SDG: 614621

Task Order #: 170426-3, 170502-5

SAF #: S17-004, I17-007

PLUTONIUM-238, 239/240

Sample ID	Lab System ID	Analyte	Results (pCi/L)	Q	TPU (2s) (pCi/L)	MDA (pCi/L)	Counting Error (2s)	^{242}Pu Tracer Rec.	Date Analyzed
Prep Blank	pbwe31sm3	^{238}Pu	-5.23E-02	U	1.28E-01	4.22E-01	1.28E-01	82.2%	06/07/17
	pbwe31sm3	$^{239/240}$Pu	-2.62E-02	U	7.41E-02	2.51E-01	7.40E-02	82.2%	06/07/17
Lab Control	lcswe31sm4	^{238}Pu	4.86E-02	U	9.74E-02	2.33E-01	9.72E-02	86.3%	06/07/17
	lcswe31sm4	$^{239/240}$Pu	8.87E+00		1.44E+00	2.33E-01	9.32E-01	86.3%	06/07/17
True Value	-----	^{238}Pu	-----		-----	-----	-----	-----	-----
	-----	$^{239/240}$Pu	1.00E+01		-----	-----	-----	-----	-----
Recovery	-----	^{238}Pu	-----		-----	-----	-----	-----	-----
	-----	$^{239/240}$Pu	88.8%		-----	-----	-----	-----	-----
B39687	614621	^{238}Pu	0.00E+00	U	6.70E-02	1.81E-01	6.70E-02	88.7%	06/07/17
	614621	$^{239/240}$Pu	2.37E-02	U	6.70E-02	1.81E-01	6.70E-02	88.7%	06/07/17
B39JR4	614940	^{238}Pu	0.00E+00	U	7.13E-02	1.93E-01	7.13E-02	83.5%	06/07/17
	614940	$^{239/240}$Pu	-2.52E-02	U	7.13E-02	2.41E-01	7.13E-02	83.5%	06/07/17
Duplicate result	614940D	^{238}Pu	0.00E+00	U	6.54E-02	2.21E-01	6.54E-02	89.3%	06/07/17
	614940D	$^{239/240}$Pu	2.31E-02	U	6.54E-02	1.77E-01	6.54E-02	89.3%	06/07/17
RPD	614940D	^{238}Pu	0%		-----	-----	-----	-----	-----
	614940D	$^{239/240}$Pu	4616%		-----	-----	-----	-----	-----

Q - Data Qualifier. U - Less than MDA. MDA - Minimum Detectable Activity. TPU - Total Propagated Uncertainty. MDAs are sample specific.